

WILD TURKEY POULT PRODUCTION SURVEY

2003

Wild turkey brood surveys are valuable for examining population trends in various forest habitat regions of the state. These brood surveys are used to monitor poults per hen (PPH) which serves as an index to annual production. Prior to 1994, there were no statewide organized observations or recordings of wild turkey recruitment. As a result, there were only educated guesses based on weather patterns and casual observations. Beginning in 1994, the first standardized statewide survey was developed and implemented by Louisiana Department of Wildlife and Fisheries (LDWF), Wildlife Division personnel.

METHODS

Survey Procedure

In Louisiana, the primary breeding and egg laying period occurs from late March to mid-April. Most mortality among turkey poults occurs during the first 3 weeks of their lives. With this in mind, 1 July - 31 August was selected for the poult survey (a period when poults should be four weeks or older in age). As such, most poults that are observed during the survey should be alive during the spring hunting season. During July and August, Wildlife Division personnel and other selected individuals record the number of hens, poults, and gobblers observed. Date, parish, and/or Wildlife Management Area where the observation is made are also recorded. Observations are usually made incidentally to the routine activities of the observer.

Study Area

The state is divided along parish lines into 5 regions based largely on historic habitat/geological regions (Figure 1).

Northwest Loblolly/Shortleaf/Hardwood

Bienville, Bossier, Caddo, Caldwell, Claiborne, DeSoto, Jackson, LaSalle, Lincoln, Red River, Union, and Webster parishes are included in this region. Wild turkeys are found throughout this region with the highest populations located in Bienville, Claiborne, Jackson, Lincoln, Union, and Webster parishes. Coastal Plain, Flatwoods, and Recent Alluvium soil areas are found in this region. These include soils with permeable and moderately permeable subsoils in the rolling hills area of the Coastal Plain, poorly drained forested soils in the Flatwoods areas, and alluvial soils derived from the Red and Mississippi Rivers in the recent alluvium forest habitat. There are 4,000,000 acres of forested habitat in this region, and 270,000 (6.8%) are publicly owned. General forest habitats consist of Loblolly/Shortleaf pine and Oak-Hickory. Loblolly pine is the dominant commercial tree species in this region.

North Mississippi Delta

Catahoula, Concordia, East Carroll, Franklin, Madison, Morehouse, Ouachita, Richland, Tensas and West Carroll Parishes comprise this region. Soil types found in this area are of the Recent Alluvium group which consist of silty and sandy soils of the Mississippi River in the better drained areas, clayey recent alluvial soils of the Mississippi River in the poorly drained areas, and alluvial soils derived from older sediments of the Arkansas and Ouachita Rivers.

Timber types consist mainly of bottomland hardwood and cypress and 199,000 (16.4%) of the 1,211,000 acres are publicly owned. Management of the remaining timber varies from select cutting to clear cutting. Much of the turkey habitat in this region was lost during the 1960s - 1980s for conversion to agriculture. Turkey populations are highest in the wooded habitat portions of Concordia, Madison and Tensas Parishes.

Western Longleaf Pine

Allen, Beauregard, Calcasieu, Evangeline, Grant, Jefferson Davis, Natchitoches, Rapides, Sabine, Vernon and Winn Parishes are included in this region. Soils located in this region are of the Coastal Plains, Mississippi Terrace and Loessial Hills, Flatwoods, Coastal Prairies, and Recent Alluvium types. The Coastal Plains soils have permeable to moderately permeable subsoils in gently rolling areas. The Flatwoods consist of the poorly drained forested soils, while the Coastal Prairie areas consist of prairie soils with very slowly permeable subsoils. The Recent Alluvium soil area was derived from the older and recent sediments of the Mississippi and Red Rivers. Historically, the major timber type was longleaf pine, but more recent timber practices have converted this area to loblolly pine plantations. Approximately 600,000 acres (13.0%) of the 4,593,000 of forested habitat are publicly owned. The U. S. Forest Service owns about 500,000 acres, and its long-range plans are to convert 50% of their acreage to longleaf pine. Bottomland hardwoods and cypress are found in the Recent Alluvium soils areas. Wild turkey populations have done very well in all parishes in this region except in the parishes of Jefferson Davis and Evangeline. Lack of a suitable habitat is believed to be the main reason for lack of or low populations in these parishes.

Atchafalaya and South Mississippi Delta

Ascension, Assumption, Avoyelles, Cameron, Iberia, Iberville, Jefferson, Lafayette, Lafourche, Orleans, Plaquemines, Pointe Coupee, St. Bernard, St. Charles, St. James, St. Landry, St. Martin, St. Mary, Terrebonne, Vermilion and West Baton Rouge Parishes are included in this region; however, coastal parishes do not provide turkey habitat. Soils in this area are mainly in the Recent Alluvium group. These include areas of silty and sandy recent alluvial soils of the Mississippi River which occur in the better drained areas and alluvial soils derived from older and recent sediments of the Mississippi and Red Rivers. Forest types include bottomland hardwoods and cypress. Forested habitat totals 2,056,000 acres of which 128,000 acres (6.2%) are publicly owned. Clear cutting and select cutting are the harvest procedures usually used. Parishes with best turkey populations include Avoyelles, Iberville, Pointe Coupee, St. Landry and West Baton Rouge.

Southeast Loblolly

East Baton Rouge, East Feliciana, Livingston, St. Helena, St. Tammany, Tangipahoa, Washington and West Feliciana Parishes comprise this region. Soils found in this area are of the Coastal Plains, Flatwoods, and Mississippi Terrace and Loessial Hills groups. Dominant forest types include loblolly pine and both upland and bottomland hardwoods. This region has the smallest public ownership of the 5 habitat regions. Only 59,000 (3.1%) of the 1,932,000 acres are publicly owned. The majority of the forested habitats are managed for pine production. All parishes in the Southeast Loblolly region have turkey, but the number of birds vary greatly, even

within a parish, due to habitat conditions.

Production Assessment

All Wildlife Management Area data were recorded by parish and included in the regional analysis. Poults per hen (PPH) were calculated as the number of poults divided by the number of hens observed for analysis unit. If an observer recorded poults but no hens, 1 hen was assigned to that observation. An analysis of covariance was conducted using MIXED Procedure models in SAS. Differences among years by habitat and habitat among years were determined using Contrast statements. Graphics use simple SE calculations for determination of confidence intervals. Observations with neither poults nor hens were not included in the PPH calculations. For our purposes, we ranked production into 5 categories: 1) excellent-4.0 PPH or higher, 2) very good- 3.3 - 3.9 PPH, 3) good- 2.6 - 3.2 PPH, 4) fair - 2.0- 2.5 PPH, or 5) poor- below 2.0 PPH (adapted from pers. comm. Southeast Wild Turkey Technical Committee). No statewide values are reported because of differences in acreage, number of observations, and production among habitat types. However, relative production for years was determined using 2 methods. (1) PPHs within habitats were ranked 1-5 (1 being highest) and summed. Years with lower values suggested better production. (2) The number of times PPHs of the 5 regions ranked 1st or 2nd within a year was determined. In this instance, the higher values suggested better production.

RESULTS AND DISCUSSION

2003 Production

During 1 July – 31 August, 2003, 198 observations were recorded and used to determine PPH ratios. Differences in the PPH index were observed among habitat regions ($P < 0.20$) (Table 1). PPH ratios were highest in the North Mississippi Delta and Western Longleaf Regions, followed by the Northwest Loblolly/Shortleaf/ Hardwood, Southeast Loblolly, and South Atchafalaya / Lower Mississippi Delta Regions (Figure 2).

Table 1. Poults per hen (PPH) by habitat region, 2003.

| Habitat Region | No. Observations | PPH Ratio | Ranking ^a | 1994 -2002 PPH Average |
|----------------------|------------------|-----------|----------------------|------------------------|
| N Mississippi Delta | 24 | 4.6 | A | 4.5 |
| W Longleaf Pine | 47 | 4.3 | A | 4.4 |
| NW Lob/Sh/Hdwood | 33 | 2.8 | B | 3.7 |
| SE Loblolly Pine | 30 | 2.6 | B | 2.3 |
| S Atch /L Miss Delta | 64 | 1.2 | C | 2.9 |

^a PPH Ratios with the same letter are not different ($P=0.20$)

Wild turkey production in 2003 was good or excellent in most regions of the state. In comparison to prior years, however, the 2003 hatch ranks among the poorest recorded (Table 2). The relative ranking is impacted by the outstanding hatches that occurred during several of the last 9 years. The 2003 PPH ratios for the Western Longleaf Pine and North Mississippi Delta are considered “excellent”. Similarly, the 2003 PPH ratios for the Northwest Loblolly/ Shortleaf/ Hardwood and Southeast Loblolly regions are considered “good”. Only the South Atchafalaya/ Lower Mississippi Delta Region had a PPH ratio considered “poor”. Cumulative 1994-2003 data is summarized in Appendices 1-8.

Table 2. Statewide production ranking by year for the period 1994-2003.

| Rank and Sum Method ^a | | Number of 1 st or 2 nd Rankings Method ^b | |
|----------------------------------|-----|---|--------|
| Year | Sum | Year | Number |
| 1999 | 15 | 1999 | 2 |
| 1996 | 20 | 1996 | 2 |
| 1997 | 22 | 2002 | 2 |
| 2002 | 24 | 1997 | 1 |
| 1998 | 27 | 1994 | 1 |
| 1994 | 28 | 2001 | 1 |
| 2001 | 28 | 1995 | 1 |
| 1995 | 30 | 1998 | 0 |
| 2000 | 32 | 2000 | 0 |
| 2003 | 32 | 2003 | 0 |

^a Lower values suggest better production.

^b Higher values suggest better production.

Ideal conditions for wild turkey production in Louisiana are thought to involve drier than normal conditions during late April through early June, and normal or above normal rainfall during late June through August. Rainfall extremes occurred during the critical months of May and June (Table 3). In the southern and central parts of the state, May was very dry and June was very wet. Heavy rainfall in June may have negatively impacted poult survival, particularly those from late hatches, in some areas of the state.

Table 3. Rainfall totals, expressed as a percentage of normal for habitat regions, May – August, 2003.

| Month | SE Loblolly Pine | S Atch /L Miss Delta ^a | W Longleaf Pine ^a | NW Lob/Sh/Hdwood ^a | N Mississippi Delta |
|--------|------------------|-----------------------------------|------------------------------|-------------------------------|---------------------|
| April | 108 | 40-142 | 40-89 | 68-78 | 106 |
| May | 39 | 6-35 | 8-35 | 58-132 | 102 |
| June | 263 | 166-211 | 166-178 | 107-123 | 147 |
| July | 175 | 98-103 | 72-108 | 76-79 | 76 |
| August | 107 | 65-76 | 65-108 | 75-139 | 75 |

^a Range is provided because of overlap of weather data regions with physiographic regions used for this survey

Figure 1

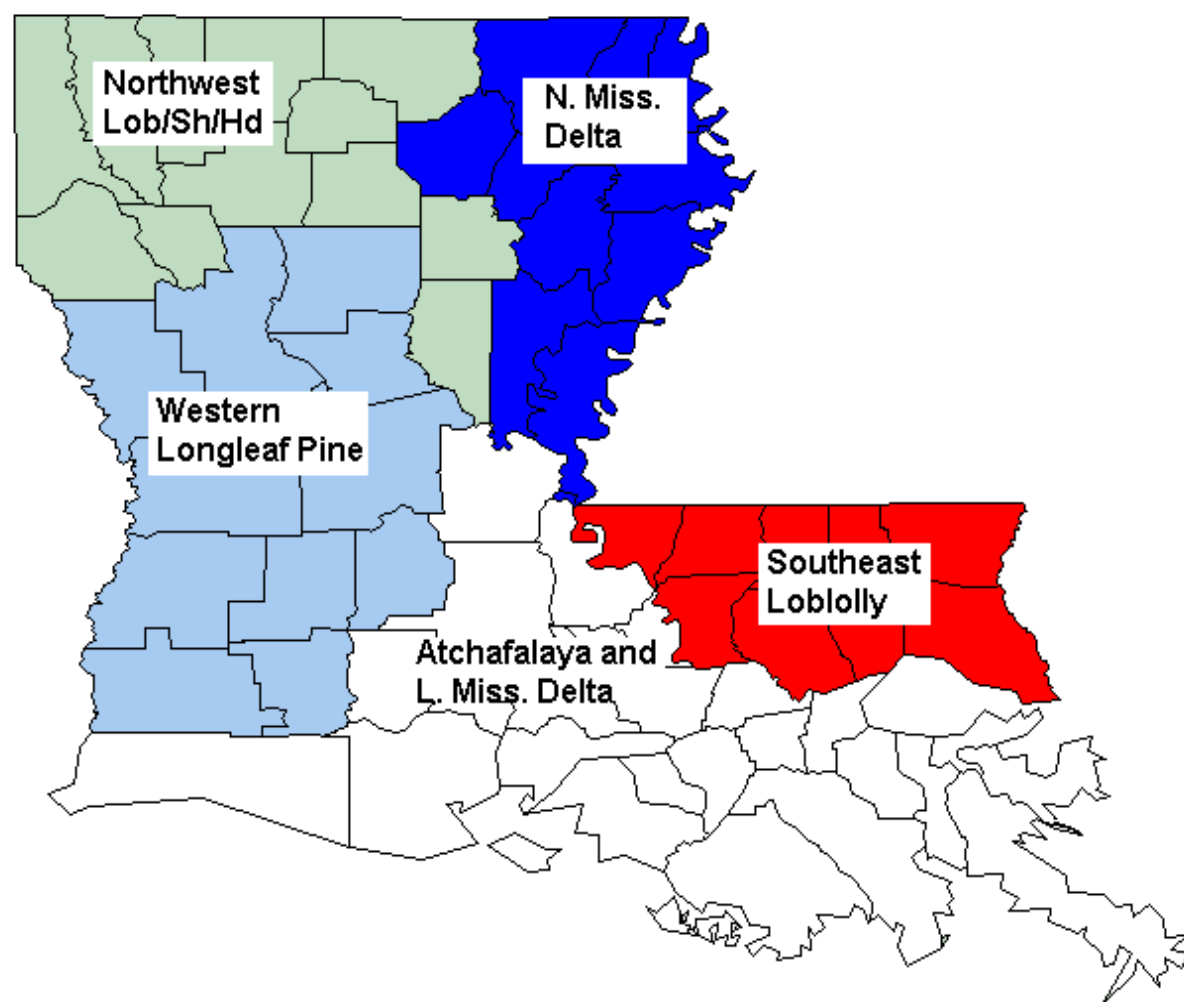
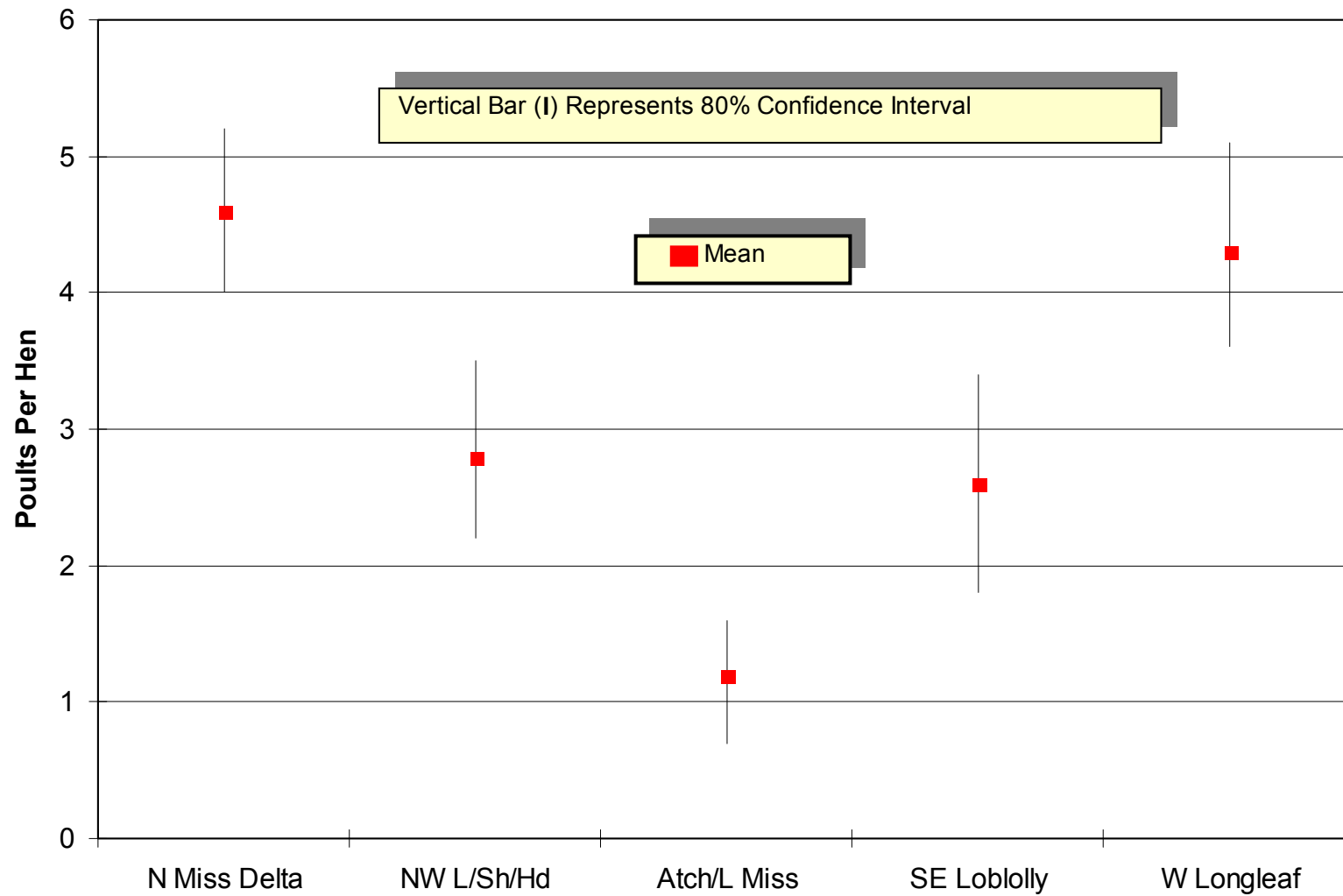


Figure 2

Turkey Production Index 2003



Appendices 1 – 8

Wild Turkey Poult Survey Data, 1994 – 2003

Appendix 1. Average poult per hen (PPH) by habitat/region for the period 1994-2003.

| Habitat/Region | 10 -Year Mean Poults Per Hen | Ranking ^a |
|----------------------------|------------------------------|----------------------|
| N Mississippi Delta | 4.4 | A |
| W Longleaf Pine | 4.5 | A |
| NW Lob/Sh/Hdwood | 3.6 | B |
| S Atch/L Mississippi Delta | 2.6 | C |
| SE Loblolly Pine | 2.4 | C |

^a Values within a Habitat/Region with the same letter are not different at $P = 0.20$.

Appendix 2. Poults per hen (PPH) by year and habitat for the period 1994-2003.

| Year | Habitat/Region | Poults Per Hen | Ranking ^a |
|------|---------------------|----------------|----------------------|
| 1994 | W Longleaf Pine | 4.7 | A |
| | SE Loblolly Pine | 3.8 | A |
| | S Atch/L Miss Delta | 2.6 | B |
| | NW Lob/Sh/Hdwood | 1.9 | B C |
| | N Mississippi Delta | 1.5 | C |
| 1995 | W Longleaf Pine | 4.5 | A |
| | S Atch/L Miss Delta | 4.4 | A B |
| | N Mississippi Delta | 3.6 | A B |
| | NW Lob/Sh/Hdwood | 2.9 | A B |
| | SE Loblolly Pine | 1.6 | C |
| 1996 | W Longleaf Pine | 5.2 | A |
| | NW Lob/Sh/Hdwood | 4.9 | A |
| | S Atch/L Miss Delta | 3.0 | B |
| | N Mississippi Delta | 2.8 | B |
| | SE Loblolly Pine | 2.3 | B |
| 1997 | W Longleaf Pine | 5.1 | A |
| | N Mississippi Delta | 4.3 | A B |
| | NW Lob/Sh/Hdwood | 3.4 | A B |
| | SE Loblolly Pine | 3.0 | B C |
| | S Atch/L Miss Delta | 1.9 | C |
| 1998 | N Mississippi Delta | 5.2 | A |
| | S Atch/L Miss Delta | 4.1 | A B |
| | NW Lob/Sh/Hdwood | 4.0 | A B |
| | W Longleaf Pine | 2.8 | B C |
| | SE Loblolly Pine | 1.8 | C |
| 1999 | N Mississippi Delta | 5.2 | A |
| | S Atch/L Miss Delta | 5.1 | A |
| | W Longleaf Pine | 4.4 | A |
| | NW Lob/Sh/Hdwood | 4.3 | A |
| | SE Loblolly Pine | 2.7 | B |
| 2000 | NW Lob/Sh/Hdwood | 3.8 | A |
| | N Mississippi Delta | 3.7 | A |
| | W Longleaf Pine | 2.9 | B |
| | S Atch/L Miss Delta | 2.4 | B C |
| | SE Loblolly Pine | 1.9 | C D |

Appendix 2 cont'd. Poults per hen (PPH) by year and habitat for the period 1994-2003.

| Year | Habitat/Region | Poults Per Hen | Ranking ^a |
|------|---------------------|----------------|----------------------|
| 2001 | NW Lob/Sh/Hdwood | 3.4 | B |
| | N Mississippi Delta | 7.0 | A |
| | W Longleaf Pine | 3.9 | B |
| | S Atch/L Miss Delta | 1.6 | C |
| | SE Loblolly Pine | 2.0 | C |
| 2002 | NW Lob/Sh/Hdwood | 3.2 | B |
| | N Mississippi Delta | 5.4 | A |
| | W Longleaf Pine | 5.7 | B |
| | S Atch/L Miss Delta | 1.0 | C |
| | SE Loblolly Pine | 2.3 | C |
| 2003 | NW Lob/Sh/Hdwood | 2.8 | B |
| | N Mississippi Delta | 4.6 | A |
| | W Longleaf Pine | 4.3 | A |
| | S Atch/L Miss Delta | 1.2 | C |
| | SE Loblolly Pine | 2.6 | B |

^a Values within a Habitat/Region with the same letter are not different at $P = 0.20$

Appendix 3. Poults per hen (PPH) by habitat by year for the period 1994-2003.

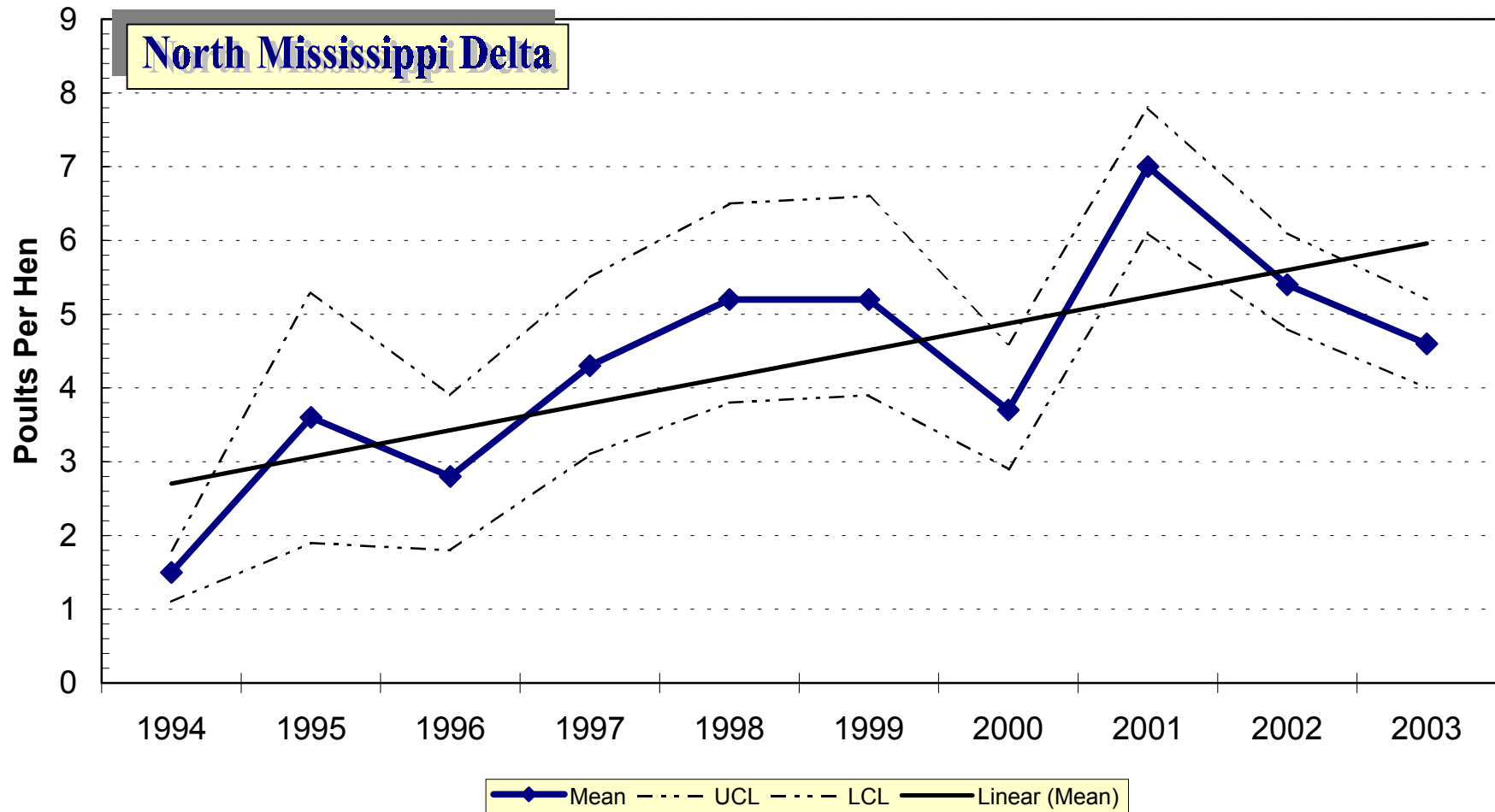
| Habitat/Region | Year | Poults Per Hen | Ranking ^a |
|---------------------|------|----------------|----------------------|
| N Mississippi Delta | 2001 | 7.0 | A |
| | 2002 | 5.4 | B |
| | 1999 | 5.2 | B C |
| | 1998 | 5.2 | B C D |
| | 2003 | 4.6 | B C D |
| | 1997 | 4.3 | C D |
| | 2000 | 3.7 | D E |
| | 1995 | 3.6 | D E |
| | 1996 | 2.8 | E |
| | 1994 | 1.5 | F |
| NW Lob/Sh/Hdwood | 1996 | 4.9 | A |
| | 1999 | 4.3 | A B |
| | 1998 | 4.0 | B C |
| | 2000 | 3.8 | B C D |
| | 2001 | 3.4 | B C D |
| | 1997 | 3.4 | B C D |
| | 2002 | 3.2 | B C D |
| | 1995 | 2.9 | D |
| | 2003 | 2.8 | C D E |
| | 1994 | 1.9 | E |
| S Atch/L Miss Delta | 1999 | 5.1 | A |
| | 1995 | 4.4 | A B |
| | 1998 | 4.1 | A B C |
| | 1996 | 3.0 | B C |
| | 1994 | 2.6 | C |
| | 2000 | 2.4 | C |
| | 1997 | 1.9 | C D |
| | 2001 | 1.6 | C D |
| | 2003 | 1.2 | D |
| | 2002 | 1.0 | D |

Appendix 3 cont'd. Poults per hen (PPH) by habitat by year for the period 1994-2003.

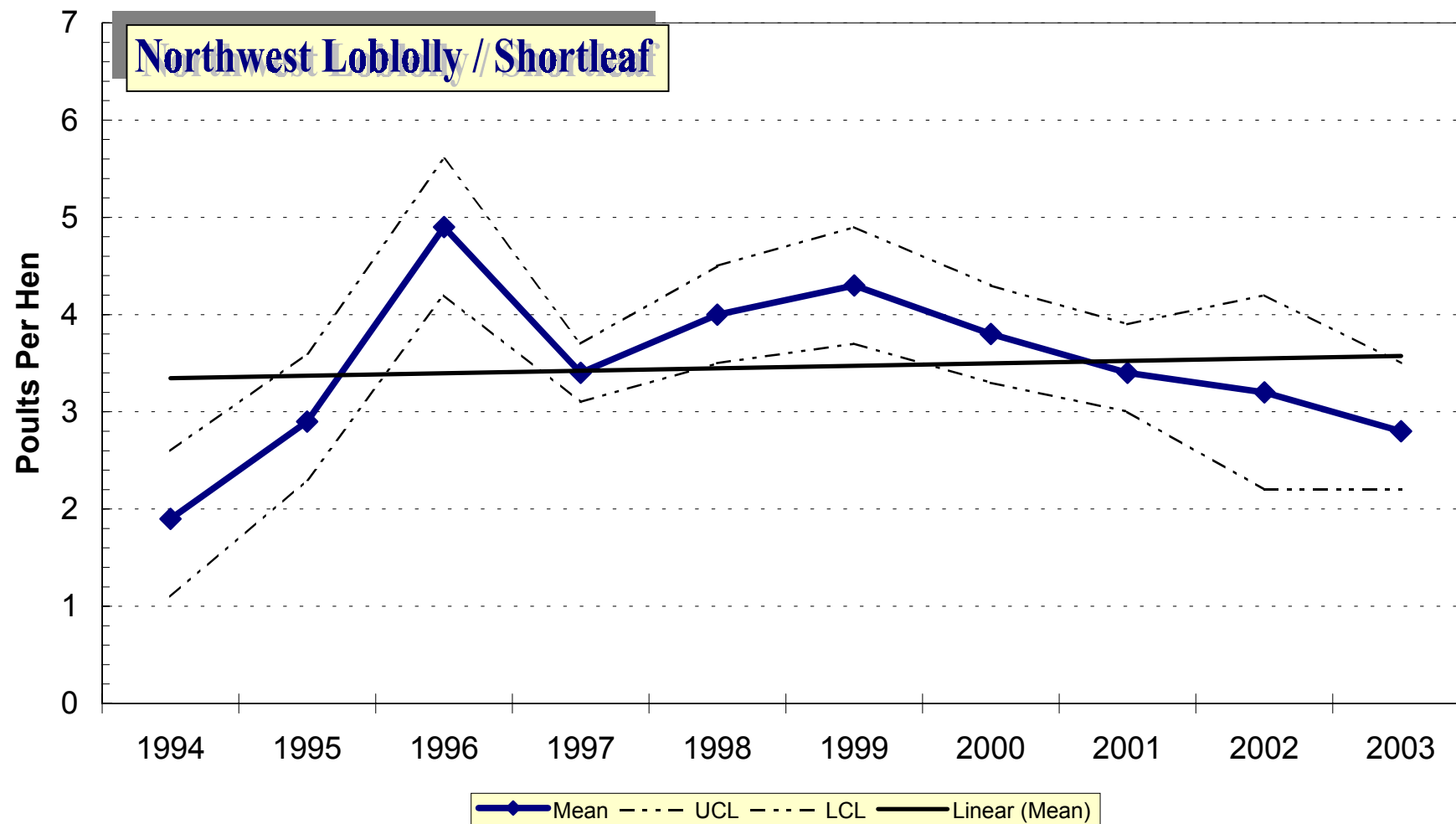
| Habitat/Region | Year | Poults Per Hen | Ranking ^a |
|------------------|------|----------------|----------------------|
| SE Loblolly Pine | 1994 | 3.8 | A |
| | 1997 | 3.0 | A B |
| | 1999 | 2.7 | B |
| | 2003 | 2.6 | B C |
| | 1996 | 2.3 | B C D |
| | 2002 | 2.3 | B C D |
| | 2001 | 2.0 | C D |
| | 2000 | 1.9 | C D |
| | 1998 | 1.8 | C D |
| | 1995 | 1.6 | D |
| W Longleaf Pine | 2002 | 5.7 | A |
| | 1996 | 5.2 | A B |
| | 1997 | 5.1 | A B |
| | 1994 | 4.7 | A B |
| | 1995 | 4.5 | B |
| | 1999 | 4.4 | A B C |
| | 2003 | 4.3 | B C |
| | 2001 | 3.9 | C |
| | 2000 | 2.9 | D |
| | 1998 | 2.8 | C D |

^a Values within a Habitat/Region with the same letter are not different at $P = 0.20$

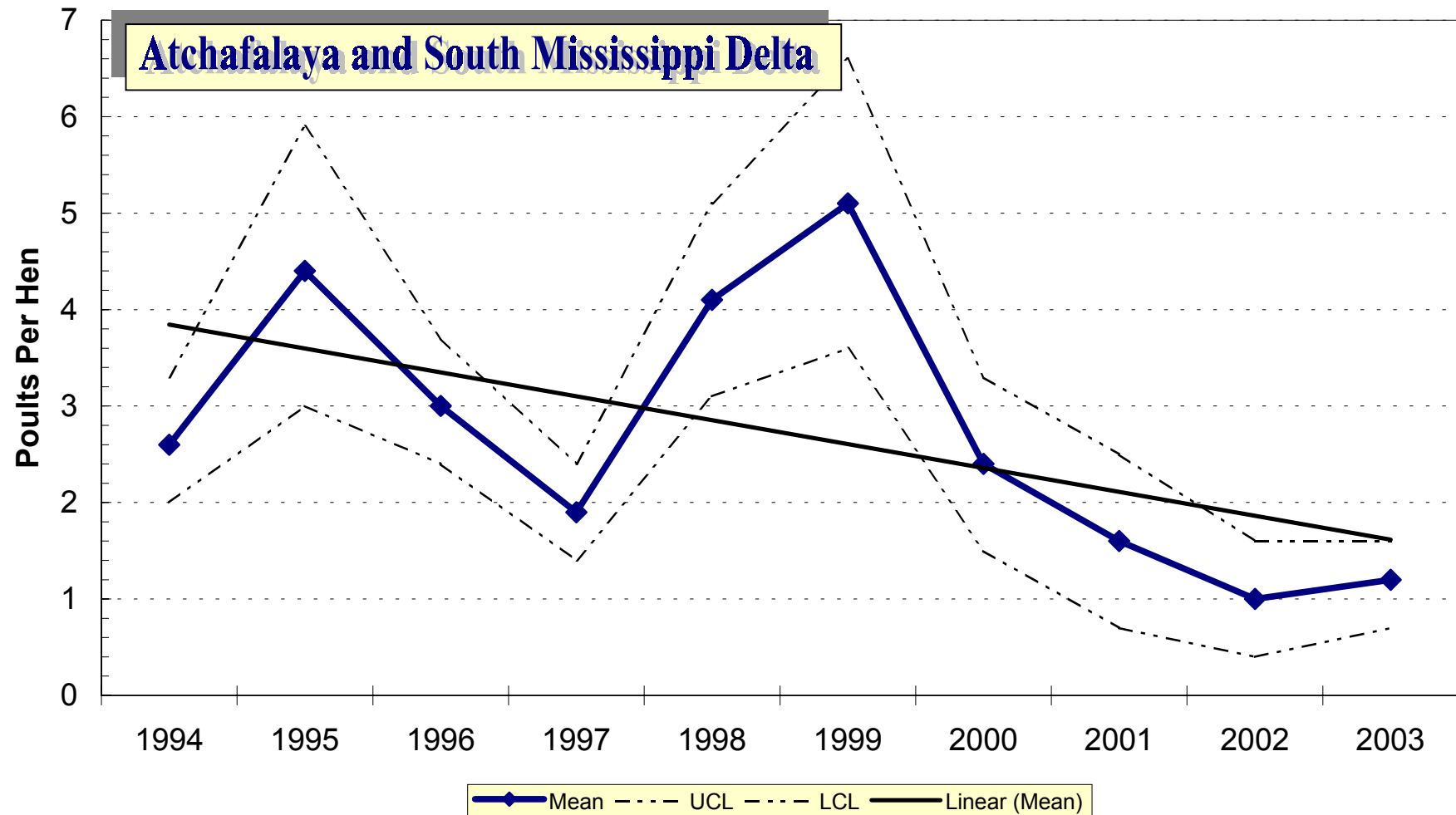
Turkey Production Index



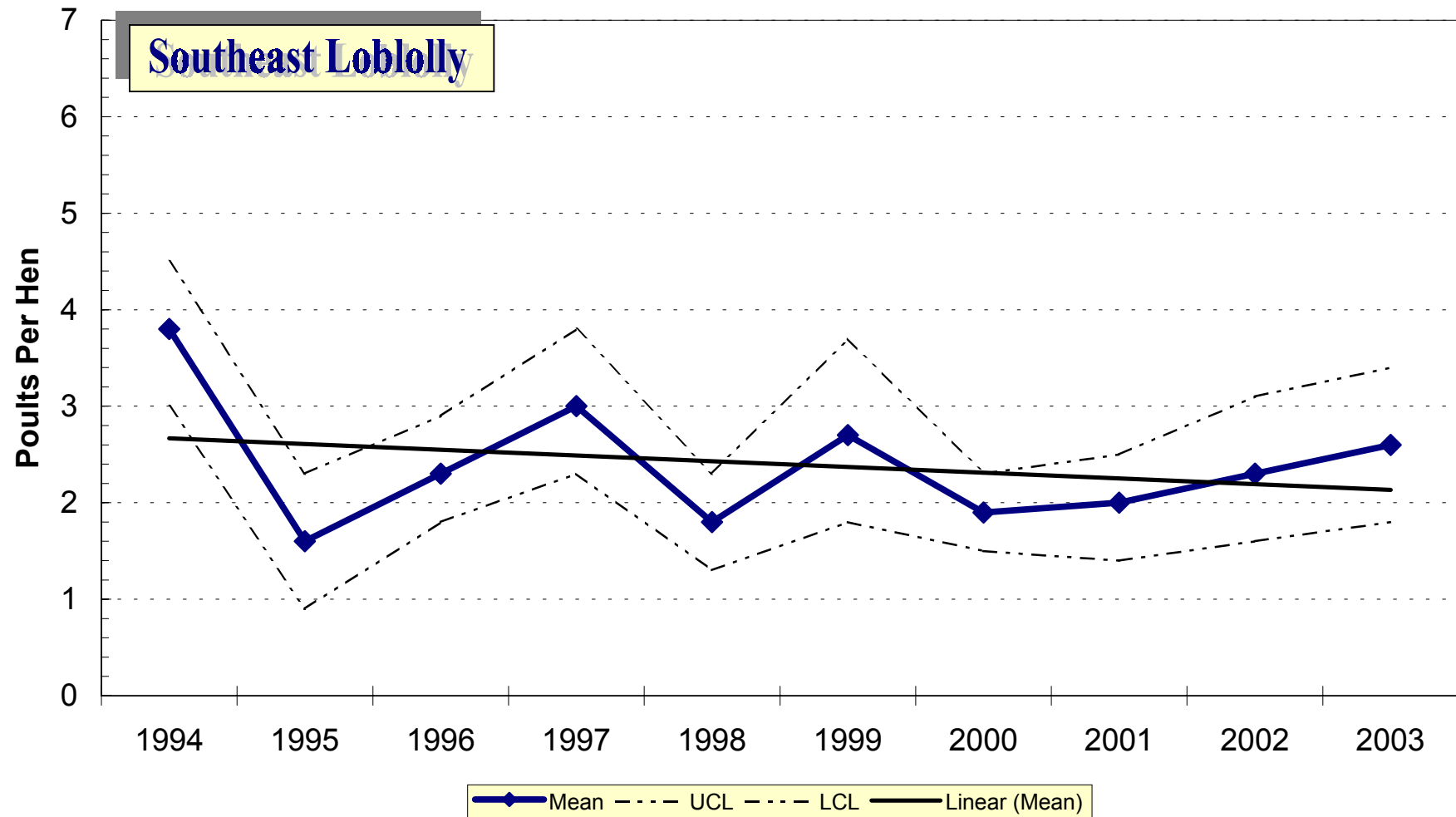
Turkey Production Index



Turkey Production Index



Turkey Production Index



Turkey Production Index

